MICROTEK
TECHNOLOGY WE LIVE

E2

LINE INTERACTIVE UPS

2 YEARS
WARRANTY
ON UPS ELECTRONICS
1 YEAR WARRANTY ON BATTERY

www.microtekdirect.com

USER'S MANUAL

MICROTEK
TECHNOLOGY WE LIVE

Uninterrupted Power Supply

Congratulations on selecting Microtek
E² Series Uninterrupted Power Supply (UPS).
Before installation of this UPS,
please read this manual carefully to familiarize yourself
with all its features, indicators and safety precautions.

Enjoy the Complete Peace of Mind !

TABLE OF CONTENTS

Section 1

Introduction

This UPS is specially designed to suit Indian conditions where the voltage can fluctuate to as low as **150 volts** & as high as **290 volts**. Keeping this in view, this UPS has the "**extended**" input voltage range of **145~300 volts**, so that the UPS gives you the corrected line voltage output of **230 volts ± 9%** and doesn't switch the UPS to "Battery Backup mode. With this UPS you will enjoy "*complete peace of mind* " even when the voltage is too low or too high.

Do not forget that the UPS has to work for voltage correction for almost 24 hours a day while the backup on battery may only be necessary for less than 1 hour in different slots of time during the day.

This UPS will help you to protect your sensitive equipment like computers and telecommunication equipment against malfunctioning due to non-reliable or distorted mains supply.

This UPS protects the connected equipment against surges, sags, spikes, etc. by means of an internal filter that works all the time.

During electrical power failures, the unit employs its internal maintenance-free battery to supply backup power without any interruption. This UPS is equipped with many features that will make your equipment to operate more reliably.

This UPS is manufactured under ISO 9001:2000 certified quality management process. Reliability is built into rugged design by carefully selecting the best components and incorporating advanced technology that offers rock-steady output. Each UPS subassembly is tested for each and every component used by a state-of-the-art automatic computerised in-circuit-tester (ICT) for value and tolerance of components. Automated manufacturing technology and the strict quality controls are the foundations for the reliability and consistency common to all our products.

This model of UPS comes with Two Years Warranty on UPS Electronics & One Year Warranty on Battery.

Section 2

Feature Highlights

Optimized SINEWAVE Performance: Unlike other UPS this E² Series UPS uses Energy Efficiently, and the output waveform is optimized to perform like Sinewave.

Inverter/Generator Compatible: This E² Series UPS has been designed to work with Inverter and Generator. This UPS will consider the input from Inverter or Generator as mains and keep providing the Backup to the computer, without discharging its own battery.

No Load Shutdown: In case No load is connected to the UPS, it will sense the load condition and automatically Shut Down after 3 minutes to protect unnecessary discharge of battery.

Fast Battery Charging: This UPS utilizes unique 5 Step High Frequency Charging Technology to charge the battery in less than 5 hrs., in order to keep your UPS ready immediately for next emergency.

Extended AVR Range of 145~300 volts: When the voltage fluctuates to as low as 150 volts & as high as 290 volts, this UPS gives you the corrected line voltage output of **230 volts ± 9%** and doesn't switch the UPS to "Battery Backup mode" like most other UPS.

Over Load / Short Circuit Protection : If the UPS is excessively overloaded in backup mode or encounters a short circuit, it will go into protection mode and warn you to correct the load condition.

Battery Deep Discharge / Over Charge Protection : The UPS has in-built electronic protection circuit which protects the batteries from getting deep discharged or over charged.

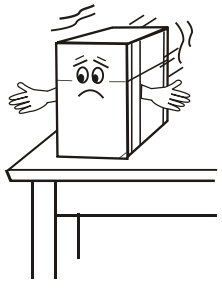
Section 3

Important Precautions

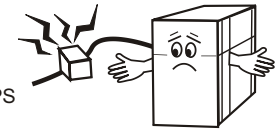
This UPS has been engineered and manufactured to assure your personal safety, but improper use can result in electrical shock or fire hazard. In order to achieve the safeguards incorporated in this UPS, observe the following basic rules of safety, installation, cleaning and repacking.

ON SAFETY

1. Operate the UPS only from a power source mentioned in the technical information of this manual(Refer Section-7). The equipment must be earthed at all times while in use.
2. Do not plug UPS's power cord into itself, which will result in a safety hazard.
3 Overloaded AC outlets and extension cords are dangerous, so are frayed power cables and broken plugs. They may result in a shock or fire hazard, call your service technician for replacement.
4. **DO NOT OPEN THE UPS :** There are no user serviceable components inside. There are dangerous high voltages inside, even when the power is off. Contact your authorised dealer if the UPS is not operating properly.
5. Do not put the UPS under the Sun directly to avoid any possibility of damage.
6. Replace battery and fuse only with the same type and rating.
7. **To avoid personal injury :**
   * Do not place the UPS on a sloping shelf unless properly secured.
   * Use a perfect stand to hold the UPS.
8. **To prevent fire Hazards :**
   * Always turn the UPS OFF, when you leave the room for more than a short period of time. Never leave the UPS ON, when leaving the house.
   * Keep children away from dropping or pushing objects into the UPS's cabinet openings. Some internal parts carry hazardous voltages.

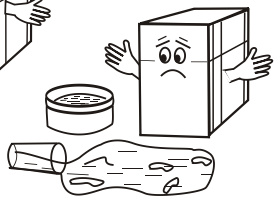


* This UPS is designed for computer, printer and fax only. Connecting other equipments may cause the UPS to behave abnormally.
* Do not add equipment that have not been designed for these UPS.
* During a lightning storm, unplug the UPS from the wall outlet.

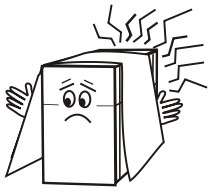


ON INSTALLATION

1. Do not allow anything to rest on the power cord and do not place the UPS where the power cord is subject to damage.

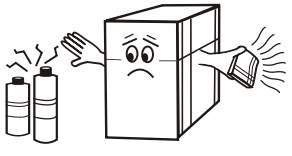


2. Do not use this UPS near water such as near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
3. This UPS is provided with ventilation openings in the cabinet to allow the release of heat generated during operation. If these openings are blocked built up heat can cause failures which may result in a fire hazard.



Therefore, NEVER :

1. Block the bottom ventilation slots by placing the UPS on a bed, sofa, rug, etc.
2. Place the UPS in a built in enclosure unless proper ventilation is provided.
3. Cover the openings with cloth or other material.
4. Place the UPS near or over a radiator or heat source.



ON CLEANING

1. Unplug and Switch Off the UPS before cleaning the outer surface.
2. Use a slightly damp (not wet) cloth.

ON RE-PACKING

1. Do not throw away the carton and packing materials. They make an ideal container in which to pack and transport the unit, when shifting the unit to another location.

Section 4

Product Package

Your Microtek UPS package includes the following items.

1. The Microtek UPS with flying in power cable.
2. AC Fuse 8Amp 20mm Fast Blow Type (for spares)
3. User's Manual

E²650 IB

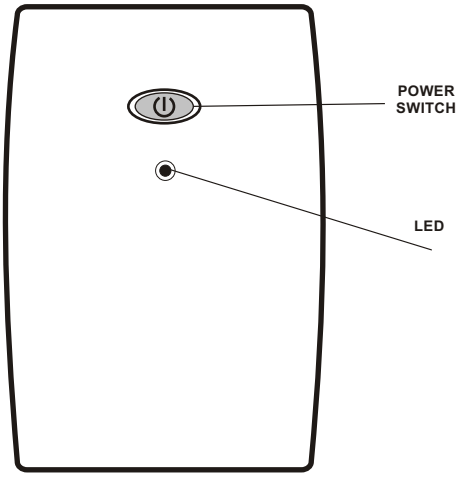
E²850 IB

E²1050 IB

Note: After unpacking, inspect the UPS for any damage or any missing item. If you find any damaged or missing item, immediately notify to the carrier and/or to the dealer.

Section 5

UPS Indicators and Controls (Front Panel)



POWER Switch

Press the Power Switch to Switch 'ON' the UPS.

Press the Power Switch again to Switch 'OFF' the UPS.

LED Indications :

The LED will light up Green-
indicating that the UPS is 'ON' and is in Mains Mode.
The LED Blinks Green indicating that the UPS is 'OFF' and Battery is Charging.

The LED will light up Red-
indicating that the UPS is 'ON' and is in Backup Mode.
The LED Blinks Red with Alarm, in case of emergency.

LED	STATUS	BUZZER	ACTION TO BE TAKEN
Green Continuous	Mains OK.	-	Switch OFF the UPS if not needed.
Green Blinking	UPS OFF, Battery Charging.	-	Switch ON the UPS if needed.
Red Continuous	Battery Mode.	1 Beep every 20 sec.	Save Your Data & Shut Down the Computer.
Red Blinking	Battery Low.	2 Beep every 2 sec.	Save Your Data & Quit Immediately.
	No Load	1 Beep every 2 sec.	Connect load, or the UPS will shut down.
	Short Circuit	Continuous Beep.	Check load for Short Circuit & Restart.
	Overload	Rapid Beep.	Reduce load.

Section 6

Connection of the equipment to UPS (Rear Panel)

Power Cord : For connecting UPS to Mains. Ensure that the UPS is supplied Power from a Grounded Socket Only.

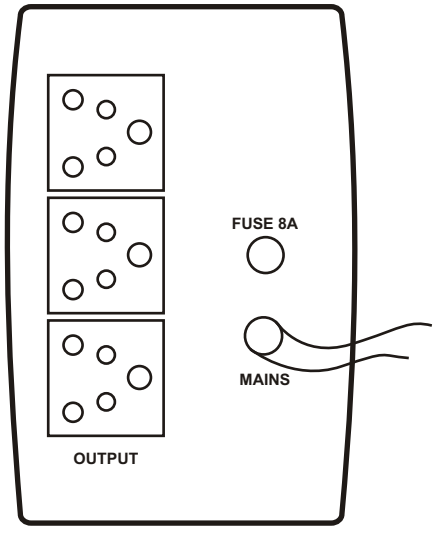
UPS Outlet : There are three pieces of standard 5 pin outlet for connecting the AC power cord of the computer.

A.C. Fuse:

This is for protecting the UPS & computer connected to the UPS, in case excess current is drawn from AC input. If the AC fuse is found defective, please be sure that it is replaced only by a compatible fuse of the same type & size. Fuse rating is mentioned below.

Recommended AC Fuse Rating :

- 8Amp(size 5x20mm)
  Fast Blow Type



Section 7

Installation-Connecting the UPS

This UPS is equipped to work with power supply with wide voltage range 145 ~ 300V AC, 50Hz ± 5%. Plug the UPS into a two pole, three wire, AC wall socket outlet equipped with **an earth connection.**

* Do not use extension cords. * Do not plug appliances such as electric heaters, toasters and vacuum cleaners into the UPS.
* Do not plug/unplug the input cord when the UPS is switched ON.

Charging the Battery

Before initial start/first time use it is recommended that the UPS may be connected to mains and battery should be charged for 4 ~ 5 hours for optimum use. The UPS charges its battery whenever it is connected to mains. For best results charge the battery before use.

Connecting the Loads

Plug the loads through the output socket of the UPS. Now, you can switch ON the loads/devices as per your requirement.

UPS suitable for the best load.

E²650 IB & E²850 IB

E²1050 IB

Note :

1. Do not connect a laser printer to the UPS. A laser printer periodically draws significantly more power than when idle and will over load the UPS.
2. The UPS output can be used only for electronic loads such as: computers.
3. In case of fuse blown out please replace the fuse with same type and rating only.

Caution :

1. Never touch the contents of fuse or sockets when the mains plug is connected OR the UPS is Switched ON.
2. This UPS is designed to operate from 230V, 50Hz, Sinewave Power Supply available from Electricity Boards. No Power-conditioning device like Stabilizer/CVT should be connected with the UPS.

Section 8

Operation

* Connect UPS to mains power supply. LED shall Blink Green, Indicating that the main is normal and Battery is Charging.
* Switch ON the UPS by POWER Switch.
* After the UPS is ON, the LED will become Green, indicating that the UPS is on Mains and the output is available.
* Now, you can switch ON the computer system without worrying about any kind of power interruptions.
* If you wish to test the UPS, you may pull-out the UPS power cord(from wall socket) or switch OFF the ON/OFF switch(of the wall socket). And, if the computer doesn't shutdown and the LED lights up Red & the buzzer starts producing beep sound at an interval of 20 sec., It means that the UPS is working in normal condition.
* After doing the above test, please ensure to plug-in the power cord to the wall socket (if removed).

Cold Start :

When the UPS is "OFF" and there is no mains power, it is possible to power-on the essential equipment connected to the UPS outlets. Make sure that only the most needed equipment is connected to the UPS at this time.

* Press the POWER switch to ON position.
* If there is no output and UPS does not go to backup mode then reset the UPS by switching 'OFF' the POWER switch to OFF position. Then switch off the unwanted loads connected to the UPS, and switch 'ON' the UPS. Complete whatever you want to do with the powered equipment, before the UPS battery is discharged.

NOTE: *This Feature may not work with certain type of loads having high inrush current.*

Alarms

Battery Backup: During battery backup (on battery) operation, the LED turns Red and the UPS gives an audible alarm consisting of 1 beep repeated after every 20 seconds. This alarm stops when the UPS returns to on-line operation.

Battery Low: When the UPS is connected to backup mode and the battery goes low, the UPS gives a audible alarm, consisting of 2 beeps repeated after every 2 seconds. Disconnect non-essential load /equipments from the UPS. Save your Data and Shut Down the Computer immediately, in order to prevent sudden Shut Down.

Short Circuit: When the UPS gives a continuous audible alarm, it means their is short circuit in the load connected. Disconnect the load, check the short circuit and reconnect with UPS.

No Load: If UPS is ON and No Load is connected to it, it will automatically sense the load condition on power failure and wait for 2 minutes, and start giving 1 beep repeated after every 2 seconds for 1 minute before shut down.

Over Load: If the UPS is overloaded, it will give rapid beep in inverter mode. Ensure to remove extra load, the beep will automatically stop.

Section 9

Trouble Shooting

Problem	Possible Cause	Remedy
UPS does not turn ON.	The ON/OFF switch is OFF.	Switch ON the ON/OFF switch.
	UPS input circuit Fuse open or missing.	Remove the load on UPS, Switch Off the UPS & Insert / replace the fuse by one of the same type and rating.
UPS operates on battery even though line voltage exists.	* Very high or very low voltage (input voltage must be within specified range). * Distorted / Improper input voltage. * AC Fuse Blown.	Test if the input voltage is out of range of the specified AVR. or has too much distortion. Also Check the AC Fuse. Replace if Blown.
UPS beeps intermittently at regular intervals.	Normal UPS operation but no mains voltage present.	None, the UPS is protecting the load.
UPS buzzer has constant tone, and mains voltage is **not** present.	UPS is overloaded or short circuit in battery mode.	Remove mains power cord. Switch OFF power knob. Remove the excess load & switch ON the UPS .
UPS does not provide expected backup time.	The UPS 's battery is weak due to recent usage and a short recharge time or battery lifetime is ending.	Charge the battery for 4~5 hours. If the backup is insufficient after recharging, Battery may need replacement.

UPS Storage : When the UPS is not to be used for a long time, the UPS should be charged by connecting to mains power supply for at least 4-5 hours. Disconnect the UPS from mains power, cover & store the UPS keeping upright in a cool, dry place. During long time storage, the battery must be charged after every 3 months. Store the UPS covered and placed upright in a cool, dry place. Disconnect all the cables connected to the UPS to avoid unnecessary discharge of the battery. **Make sure that the UPS is switched OFF.**

Section 10

Battery & Replacing the Battery

The battery is the most critical part of the UPS, as it has to supply the backup. Hence, the battery must be replaced as soon as you notice that the **" battery needs replacement "**. Before replacing the battery ensure the following steps :

1. The UPS is plugged on, in a live wall socket.

2. Charge the UPS for at least 4~5 hours.

3. Check the Backup on a standard load, like 100W Lamp.

If you don't get proper backup, only then proceed to replace the battery.

Note : This UPS contains potentially hazardous voltages. Do not attempt to open the UPS when it is connected to the mains. Please be sure that all the inlet & outlet cables are disconnected and the ON/OFF switch is in OFF position. This unit contains no user serviceable parts. Repairs are to be performed by trained service personnel only.

Dispose off the old battery properly. The battery contains lead and poses a hazard to the environment and human health if not disposed off properly. See the instructions with the new battery for more information.

Battery Replacement: The UPS has an easy to replace battery system.

1. Remove 6 Screws on both side panels of the UPS, it will separate both the side panels from the back plate.
2. Press the UPS down near to front bezel and gently remove the bezel.
3. Lay the UPS on one side and remove the side facing up.
4. Disconnect the wires connecting the battery/batteries to the UPS. Loosen the wire by wiggling them while pulling straight back from the battery connector.
5. Gently pull the battery/batteries out.
6. Place the new battery/batteries in the UPS carefully, avoid punching the wires.
7. Connect the new battery/batteries in place of the old. Red wire - to Red terminal. / Black wire - to Black terminal.

   Note : Small sparks at the battery connections are normal during connection.
8. Close the Set and tighten the screws.

Section 11 Technical Specifications

MODEL		E²650 IB	E²850 IB	E²1050 IB
Input	Range / Frequency	145~300V AC / 50Hz±5%		
Output	Voltage / Transfer Time	230V±9% AC / <6ms		
	Regulator on Mains / Regulator on Battery	Automatic Voltage Regulation / Pulse Width Modulation		
Protection	Unit Input / Noise	Fuse Protection / Noise Filter		
	Short Circuit (Line) / Short Circuit (Inverter)	Fuse Protection / Pulse to Pulse Electronic active Protection		
Battery	Type / Recharge Time	SMF / 2~5 Hrs. (depending on the status of Battery)		
	Battery Rating	12V 7.2AH	12V 7.2AH x 2	12V 7.2AH x 2
`	Backup Time	(Typ.1PC) 10~20min.	(Typ.1PC) 20~40min.	(Typ.2PC) 10~20min.
Alarm	Battery Backup (Sound beeping)	1 Beep per 20 sec. (Approx.)		
	Low Battery	2 Beeps per 2 sec. (Approx.)		
	No Load	1 Beep per 2 sec. (Approx.)		
	Short Circuit / Overload	Sound Beeping Continuously/Rapid		
LED Display	Green	Mains mode operation / AVR Working		
	Red/Orange	Inverter output from battery		
Physical	Size (L x W x H)mm / Weight (Approx.) Kg.	(310x90x170) / 7.0Kg.	(350x125x170) / 10.5Kg	(350x125x170) / 11Kg
Environment	Operating Temperature / Rel. Humidity	0^{0}C ~ 48^{0}C ; 32^{0}F ~ 120^{0}F / 0 to 90% non-condensing		
Noise	Audible Noise level	<35dB, distance 1 meter from UPS		

* Above specifications are measured under computer load. * Specifications are subject to change without notice.

In case of any “Customer Support” requirement kindly ring up or write to Microtek Branch/Service Centre, indicating following details:

(i) Model Number & Serial Number of the product.

(ii) Name & phone no. of the contact person with Location/full Address where the product is available and e-mail ID if any.

(iii) Reported problem/description of complaint.

Note:- (a) Refer all servicing queries to Microtek Service Centres only.

(b) Please take care that Serial Number is kept intact and that the product is not allowed to be fiddled (opened) by any unauthorised person; otherwise the warranty will be void.

Service H.O. Tel: 011-42733333 **Service E-mail for UPS: ups@microtekdirect.com**

*All disputes subject to Delhi jurisdiction only.

MICROTEK

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